REMARKS

I. Introduction

With the addition of claim 31, claims 1 to 31 are currently pending in this application. In view of the foregoing amendments and following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

II. Rejection of Claims 1 to 30 Under 35 U.S.C. § 102 (b)

Claims 1 to 30 were rejected under 35 U.S.C. § 102 (b) as anticipated by U.S. Patent No. 5,029,087 ("Cowan et al."). Applicant respectfully submits that Cowan et al. do not anticipate claims 1 to 30 for the following reasons.

Claim 1 relates to a method for operating a torque-converter lockup clutch for a hydrodynamic torque converter. Claim 1 recites that the slip of the torque converter is adjusted using a setpoint value, while the torque-converter lockup clutch is being closed. Claim 1 further recites that the setpoint value is continuously selected inside a closing interval after the initiation of said closing interval as a function of time and taking into account the input torque currently applied to the torque converter.

Claim 11 relates to a control device for a torque-converter lockup clutch for a hydrodynamic torque converter. Claim 11 recites that a sensor for detecting the input torque applied to the torque converter is connected to a control unit. Claim 11 further recites that the control unit selects a setpoint value inside a closing interval after the initiation of said closing interval for the slip of the torque converter as a function of time and takes into consideration the input torque currently being applied to the torque converter inside the closing interval.

Claim 16 relates to a method for operating a torque-converter lockup clutch for a hydrodynamic torque converter. Claim 16 recites the step of adjusting the slip of the torque converter in accordance with a setpoint value while closing the torque-converter lockup clutch. Claim 16 further recites that the setpoint value is continuously selected inside a closing interval after the initiation of said closing interval as a function of time and takes into account the input torque currently applied to the torque converter.

Claim 26 relates to a control device for a torque-converter lockup clutch for a hydrodynamic torque converter. Claim 26 recites that the control device

includes a control unit and a sensor connected to the control unit. Claim 26 recites that the sensor is configured to detect input torque applied to the torque converter. Claim 26 further recites that the control unit is configured to select a setpoint value for the slip of the torque converter inside a closing interval after the initiation of said closing interval as a function of time and taking into consideration the input torque currently being applied to the torque converter.

Cowan et al. purportedly relate to a control for a hydrokinetic torque converter lockup clutch. Abstract. The system of Cowan et al. makes efforts to assure, via error compensation, that its system is controlled consistent with the chosen setpoint value preselected time characteristic, i.e., the "desired" slip. The duty cycle to the solenoid is tweaked to compensate for the difference between the actual slip and the desire slip. In contrast, the present claims focus on a shift to a completely different preselected time characteristic, i.e., desired slip curve, upon detection of a predetermined level of change in the input torque. See Figure 2 and p. 4, lines 26 to 29.

To control the magnitude of clutch slippage a target slip is stated by Cowan et al. to be set according to variables such as engine and turbine speed. See col. 2, lines 13 to 17 and col. 3, lines 5 to 9. A torque converter lockup control is stated to establish a calculated converter slip range by controlling the duty cycle for a pulse width pressure that actuates the clutch. See col. 2, lines 26 to 29. The duty cycle for the solenoid valve is stated to be adjusted in accordance with the computation of the controller which computes a corrected slip which takes into account a slip error. See col. 2, lines 41 to 46. The slip error is determined to be the difference between a desired slip and the measured slip. See col. 3, lines 30 to 31. A duty cycle is then computed as a result of that computation so that the bypass clutch control valve, which is sensitive to changes in duty cycle, will produce a controlled decay of slip with respect to time. See col. 3, lines 36 to 40. The error is stated to be used to address the duty cycle memory register for the appropriate value which in turn causes an adjustment of the input to the pulse width modulated solenoid. See col. 3, lines 64 to 67.

Cowan et al. do not disclose, or even suggest, selecting a setpoint value taking into account the input torque currently applied to the torque converter, as recited in claims 1, 11, 16 and 26.

According to the present claims, a transition from the open state into the closed state of the torque-converter lockup clutch is achieved according to a preselected time characteristic converting the slip present at the beginning of the closing interval as an initial value into a target value, within the closing interval. See p. 4, lines 7 to 13. This preselected time characteristic corresponds generally with the "desired" slip curve shown in Figure 6 of Cowan et al. Cowan et al. recognize, however, that in reality the actual slip as controlled, for example, by a solenoid, is different than the desired slip, and therefore, adjusts the duty cycle of the solenoid so as to compensate for this error. Nowhere, however, do Cowan et al. disclose, or even suggest, that its system takes into account an input torque currently applied to a torque converter in making this error adjustment. Rather, Cowan et al. state that its calculation takes into account the desired slip less a computed actual slip, neither of which take into account the input torque (E) currently applied to the torque converter. See col. 3, lines 12 to 14. The desired slip is stated to depend on information from a throttle position sensor, an engine speed sensor, a gear shift selector sensor, oil temperature sensor and transmission input shaft speed sensor. Further, the actual slip calculation is stated to depend on engine speed and turbine speed. See col. 3, lines 8 to 9. Consistent with the above, Cowan et al. state that rapid torque changes result in "eventual compensation of duty cYcle [sic]," i.e., over successive loops, but that the system "will allow rapid torque changes," i.e., without generating a new setpoint value, "to be absorbed by short periods of increased slip, or decreased slip," i.e., within a given closing interval, "as the case may be, without being felt by the driver." See col. 15, lines 47 to 53. Therefore, Cowan et al. do not disclose all of the limitations of claims 1, 11, 16 and 26.

The Office Action refers to Figures 5 and 6, col. 4, lines 30 to 38 and col. 13, lines 11 to 31 and alleges that Cowan et al. disclose taking into account the input torque applied to the torque converter. See Office Action at p. 2. However, none of these references even mention the input torque applied to the torque converter.

To anticipate a claim, each and every element as set forth in the claim must be found in a single prior art reference. Verdegaal Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Furthermore, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claim." Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 U.S.P.Q.2d

1913, 1920 (Fed. Cir. 1989). That is, the prior art must describe the elements arranged as required by the claims. In re Bond, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). As more fully set forth above, it is respectfully submitted that nowhere do Cowan et al. disclose, or even suggest, selecting a setpoint value taking into account an input torque currently applied to a torque converter, as recited in claims 1, 11, 16 and 26. Therefore, it is respectfully submitted that Cowan et al. do not anticipate claims 1, 11, 16 and 26.

As for claims 2 to 10, which ultimately depend from claim 1 and therefore include all of the limitations of claim 1, Applicant respectfully submits that Cowan et al. do not anticipate these dependent claims for at least the same reasons provided above in support of the patentability of claim 1.

As for claims 12 to 15, which ultimately depend from claim 11 and therefore include all of the limitations of claim 11, Applicant respectfully submits that Cowan et al. do not anticipate these dependent claims for at least the same reasons provided above in support of the patentability of claim 11.

As for claims 17 to 25, which ultimately depend from claim 16 and therefore include all of the limitations of claim 16, Applicant respectfully submits that Cowan et al. do not anticipate these dependent claims for at least the same reasons provided above in support of the patentability of claim 16.

As for claims 27 to 30, which ultimately depend from claim 26 and therefore include all of the limitations of claim 26, Applicant respectfully submits that Cowan et al. do not anticipate these dependent claims for at least the same reasons provided above in support of the patentability of claim 26.

In summary, Applicant submits that claims 1 to 30 are not anticipated by Cowan et al. Withdrawal of this rejection is respectfully requested.

III. New Claim 31

New claim 31 has been added herein. It is respectfully submitted that new claim 31 does not add any new matter and is fully supported by the present application, including the Specification. Because claim 31 includes features analogous to features included in claims 1, 11, 16 and 26, it is respectfully submitted that claim 31 is patentable over the reference relied upon for at least the same reasons submitted above in support of the patentability of claims 1, 11, 16 and 26.

IV. Conclusion

It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

KENYON & KENYON

Dated: June 21, 2004 By: Richard L. Mayer

Richard L. Mayer
Reg. No. 22,490

One Broadway
New York, New York 10004
(212) 425-7200
CUSTOMER NO. 26646